

4.7.2.4 Pantex Plant

4.7.2.4.1 Land Resources

In addition to the storage alternatives, Pantex is being considered as a site for the two other DOE programs identified in Table 4.7.1-1. The total area of undisturbed land that could be affected by these programs during operation 97 ha (241 acres), or 6.5 percent of the government-owned land at Pantex. Site development would be performed in accordance with the land use plans in the *Pantex Site Development Plan*. Long-term storage alternatives which utilize recycled wastewater could require land disturbance and land acquisition for construction of a pipeline. Proposed development would be compatible with the industrial use visual character of the developed areas of Pantex. Cumulatively, the actions would consume land, but would be consistent with the land use plans and visual character of the site.

4.7.2.4.2 Site Infrastructure

Some cumulative impacts are possible at Pantex resulting from siting the disposition and storage facilities, and facilities resulting from the other two DOE programs identified in Table 4.7.1-1. The site infrastructure cumulative impacts at Pantex that would result from operation of the proposed projects are shown in Table 4.7.2.4.2-1. Pantex has adequate site availability to meet the requirements for all of the site infrastructure resources except for peak load. Power transmission lines and electrical distribution equipment would be needed to meet the increased power demand.

Table 4.7.2.4.2-1. Site Infrastructure Cumulative Operation Impacts at Pantex Plant

Requirement	Electrical		Fuel	
	Energy (MWh/yr)	Peak Load (MWe)	Oil (l/yr)	Natural Gas (m3/yr)
No Action	46,266	10	795,166	7,200,000
Storage and Disposition ^a	58,000	10	38,000	5,200,000
Stockpile Stewardship and Management	0 ^b	1 ^c	0 ^b	0 ^b
Waste Management	NA	3.8	NA	NA
Cumulative Requirement	104,266	24.8	833,166	12,400,000
Site Availability	201,480	23	1,775,720	289,000,000

^a Collocation Alternative.

^b No Action Alternative.

^c Downsize Weapons Assembly/Disassembly and High Explosive Fabrication Alternative.

Note: NA=data was not analyzed in the associated EIS.

Source: DOE 1995cc; DOE 1996b; Table 4.2.4.2-1.

4.7.2.4.3 Air Quality and Noise

Cumulative impacts to air quality at Pantex include impacts from the No Action Alternative, the two other DOE programs identified in Table 4.7.1-1, and the proposed facilities for each storage alternative. Concentrations are calculated for these emissions and are then compared to Federal and State regulations and guidelines to determine compliance.

Pantex is currently in compliance with the NAAQS as well as State regulations and guidelines. Air emissions attributable to the storage alternatives would increase concentrations of criteria pollutants. Potential cumulative impacts are presented in Table 4.7.2.4.3-1. The resulting concentrations from cumulative impacts would be in compliance with Federal and State regulations.

Table 4.7.2.4.3-1. Estimated Cumulative Operational Concentrations of Pollutants at Pantex Plant and Comparison With Most Stringent Regulations or Guidelines—No Action and Storage Alternatives

Pollutant	Averaging Time	Most Stringent Regulations or Guidelines ^a (µg/m ³)	No Action (µg/m ³)	Other Onsite Activities ^b (µg/m ³)	Upgrade Without RFETS or LANL Material (µg/m ³)	Consolidation		
						Construct New and Modify Existing Zone 12 South Facilities (µg/m ³)	New Facility (µg/m ³)	Collocation (µg/m ³)
Criteria Pollutants								
Carbon monoxide	8-hour	10,000 ^c	602	17.5	619.5	625.4	625.75	625.4
	1-hour	40,000 ^c	2,900	92.8	2,993	3,014	3,015	3,014
Lead	Calendar Quarter	1.5 ^c	0.09	d	0.09	0.09	0.09	0.09
Nitrogen dioxide	Annual	100 ^c	2.15	1.4	3.55	3.69	3.68	3.69
Ozone	1-hour	235 ^c	d	e	e	e	e	e
Particulate matter less than or equal to 10 microns in diameter	Annual	50 ^c	8.73	0.06	8.79	8.83	8.82	8.83
	24-hour	150 ^c	88.5	0.93	89.4	90.1	90.0	90.1
Sulfur dioxide	Annual	80 ^c	<0.01	0	<0.01	<0.01	<0.01	<0.01
	24-hour	365 ^c	<0.01	0	<0.01	0.05	0.04	0.05
	3-hour	1,300 ^c	<0.01	0	<0.01	0.26	0.24	0.26
	30-minute	1,045 ^c	<0.01	0	<0.01	0.69	0.65	0.69
Mandated by Texas								
Gaseous fluorides (as HF)	30-day	0.8 ^f	<0.75	0	<0.75	<0.75	<0.75	<0.75
	7-day	1.6 ^f	<0.75	0	<0.75	<0.75	<0.75	<0.75
	24-hour	2.9 ^f	0.75	0	0.75	0.75	0.75	0.75
	12-hour	3.7 ^f	1.05	0	1.05	1.05	1.05	1.05
	3-hour	4.9 ^f	4.21	0	4.21	4.21	4.21	4.21
Hydrogen sulfide	30-minute	111 ^f	d	0	d	d	d	d
Total suspended particulates	3-hour	200 ^f	g	0	d	3.62 ^h	3.23 ^h	3.77 ^h
	1-hour	400 ^f	g	0	d	9.75 ^h	8.71 ^h	10.15 ^h

Table 4.7.2.4.3-1. Estimated Cumulative Operational Concentrations of Pollutants at Pantex Plant and Comparison With Most Stringent Regulations or Guidelines—No Action and Storage Alternatives—Continued

Pollutant	Averaging Time	Most Stringent Regulations or Guidelines ^a ($\mu\text{g}/\text{m}^3$)	Consolidation					
			No Action ($\mu\text{g}/\text{m}^3$)	Other Onsite Activities ^b ($\mu\text{g}/\text{m}^3$)	Upgrade Without RFETS or LANL Material ($\mu\text{g}/\text{m}^3$)	Construct New and Modify Existing Zone 12 South Facilities ($\mu\text{g}/\text{m}^3$)		Collocation ($\mu\text{g}/\text{m}^3$)
Hazardous and Other Toxic Compounds								
Chlorine	Annual	1.5 ^f	d	0	d	<0.01 ^h	<0.01 ^h	<0.01 ^h
	30-minute	15 ^f	d	0	d	0.03 ^h	0.03 ^h	0.04 ^h
Hydrogen chloride	Annual	0.1 ^f	0.07	0	0.07	0.07	0.07	0.07
	30-minute	75 ^f	6.17	0	6.17	6.18	6.18	6.17
Hydrazine	Annual	0.013 ^f	d	0	d	<0.0001 ^h	<0.0001 ^h	<0.0001 ^h
	30-minute	0.13 ^f	d	0	d	0.01 ^h	<0.01 ^h	0.01 ^h
Nitric acid	Annual	5.2 ^f	d	0	d	<0.01 ^h	<0.01 ^h	<0.01 ^h
	30-minute	52 ^f	d	0	d	0.04 ^h	<0.04 ^h	0.76 ^h
Phosphoric acid	Annual	1 ^f	d	0	d	<0.01 ^h	<0.01 ^h	<0.01 ^h
	30-minute	10 ^f	d	0	d	0.01 ^h	0.01 ^h	0.01 ^h
Sulfuric acid	24-hour	15 ^f	d	0	d	<0.01 ^h	<0.01 ^h	<0.01 ^h
	1-hour	50 ^f	d	0	d	0.01 ^h	0.01 ^h	0.01 ^h

^a The more stringent of the Federal and State standard is presented if both exist for the averaging time.

^b Other onsite activities include those associated with the Stockpile Stewardship and Management and Waste Management programs.

^c Federal and State standards.

^d No sources of this pollutant have been identified.

^e Ozone, as a criteria pollutant, is not directly emitted nor monitored by the site. See Section 4.1.3 for a discussion of ozone-related activities.

^f State standard or guideline.

^g Data not available from source document.

^h The concentration represents the alternative contribution and other onsite activities.

Note: 1-hour predicted concentrations were used for 30-minute standard. Concentrations are based on site contribution and do not include the contribution from non-facility sources. Source: 40 CFR 50; DOE 1995dd; DOE 1996b; PX DOE 1996a; TX NRCC 1992a; Table 4.2.4.3-1.

Cumulative noise impacts include contributions from existing and planned facilities plus proposed storage facilities at the site. Noise impacts may result both from onsite noise sources and from offsite sources such as traffic. Noise impacts on individuals from the storage facilities are expected to be small, resulting in little or no increase in noise levels at offsite areas. Little or no increase in cumulative noise impacts to individuals offsite is expected to occur.

4.7.2.4.4 *Water Resources*

Table 4.7.2.4.4–1 summarizes the estimated cumulative water requirements for the storage alternatives and the two other DOE programs identified in Table 4.7.1–1. Water requirements during the operation of all the proposed projects would be obtained from groundwater resources or if feasible, from the city of Amarillo Hollywood Road Wastewater Treatment Plant. The cumulative water requirements for the site would be a 66-percent increase in the projected No Action usage or approximately 22 percent of the capacity of the groundwater wells at Pantex (1,900 million l/yr [502 million gal/yr]). The total annual site cumulative withdrawal would be approximately 50 percent less than what is currently being withdrawn from the aquifer for use at Pantex (836 million l/yr [221 million gal/yr]). Withdrawing 414 million l/yr (109 million gal/yr) at Pantex would result in drawdowns of approximately 3.9 cm/yr (1.5 in/yr). These additional groundwater withdrawals would add to the existing decline in water levels of the Ogallala Aquifer. To alleviate some of the affects from pumping groundwater from the Ogallala Aquifer, the City of Amarillo is considering supplying treated wastewater to Pantex from the Hollywood Road Wastewater Treatment Plant for industrial use. However, details have not been determined.

Table 4.7.2.4.4–2 summarizes the estimated cumulative wastewater discharge to ponds or available for recycling. Total estimated cumulative wastewater discharge (169.2 million l/yr [44.7 million gal/yr]) would be a 20-percent increase in the projected discharge. Existing Pantex treatment facilities could accommodate all the new cumulative process and wastewater streams.

4.7.2.4.5 *Geology and Soils*

Cumulative impacts to geologic and soil resources are expected to be minor as a result of the storage alternatives and the other DOE programs identified in Table 4.7.1–1. A total of 97 ha (241 acres) of the available land at Pantex could be disturbed at the site. Soil erosion and storm water control measures would be used during construction to minimize erosion from the disturbed areas. No valuable geologic resources would be affected by any of the planned programs.

4.7.2.4.6 *Biological Resources*

In addition to ongoing activities and the Storage Alternatives, the Pantex site is being considered for the two other DOE programs identified in Table 4.7.1–1. Some facilities associated with these two programs would largely be within developed areas of the site. Cumulative impacts to terrestrial resources or threatened and endangered species would be minimal. The total area of land used by new facilities would represent about 97 ha (241 acres). Wastewater discharge from the various alternatives could lead to cumulative impacts to site playas. These could include increases in the area of permanent water and possible changes in vegetative composition.

4.7.2.4.7 *Cultural and Paleontological Resources*

The other two DOE programs identified in Table 4.7.1–1 may require ground-disturbing construction, facility modification, and changes in land access and use at Pantex. To date, no known archaeological, Native American, or paleontological resources exist within the areas selected for construction at Pantex, but some of the areas have not been systematically surveyed. Prior to construction activity, specific surveys, evaluations, and Native American consultations would be conducted pursuant to NHPA, the *American Indian Religious Freedom Act*, and the *Native American Graves Protection and Repatriation Act*. Cumulative impacts resulting from the storage alternatives, if any, are expected to be minimal.

Table 4.7.2.4.4-1. Cumulative Annual Water Usage at Pantex Plant

Program	Water Requirements (million l/yr)
No Action	249
Storage and Disposition	130 ^{a,b}
Stockpile Stewardship and Management	0 ^c
Waste Management	35 ^a
Total annual cumulative water usage	414

^a Data represents the maximum value for the comparative scenario.

^b Data represents the Collocation Alternative.

^c No additional water usage would result from this program.

Source: DOE 1995dd; DOE 1996b; PX 1995a:1; Table 4.2.4.4-1.

Table 4.7.2.4.4-2. Cumulative Annual Wastewater Discharge at Pantex Plant

Program	Nonhazardous Sanitary and Industrial Wastewater (million l/yr)
No Action	141
Storage and Disposition	12.2 ^{a,b}
Stockpile Stewardship and Management	0 ^c
Waste Management	16 ^a
Total annual cumulative water usage	169.2

^a Data represents the maximum value for the comparative scenario.

^b Data represents the Collocation Alternative.

^c No additional wastewater discharge would result from this program.

Source: DOE 1995dd; DOE 1996b; PX 1995a:1; PX MH 1994a; Table 4.2.4.4-1.

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4.7.2.4.8 Socioeconomics

Cumulative impacts on Pantex's regional economy, population, housing, community services and local transportation would be minor. As shown in Table 4.7.2.4.8-1, the regional economy would improve without any burden on the housing market. The cumulative impact shown in Table 4.7.2.4.8-1 would be minor because of the relatively small size of the programs.

Table 4.7.2.4.8-1. Socioeconomic Cumulative Impacts at Pantex Plant

Program	Direct Employment^a
Storage and Disposition ^b	1,176
Stockpile Stewardship and Management	280
Waste Management	654
Total	2,110

^a Operations.

^b Collocation Alternative.

Source: DOE 1995cc; DOE 1996b; Section 4.2.4.8.

4.7.2.4.9 Public and Occupational Health and Safety

Radiological Impacts. The maximum incremental radiological doses and resulting health effects for the storage alternative, the No Action Alternative, and other actions planned at Pantex, are presented in Table 4.7.2.4.9-1. Although these impacts could be added, it should be noted that the exact locations of the facilities for planned actions may change. In addition, because each of these facilities is sited in a different location, the location of the MEI for each is also different. The MEIs have been selected to maximize the potential dose for a given facility. Since the MEI would have to be resident at more than one location simultaneously in order to receive the maximum dose from each facility, summing the doses would be misleading. The offsite population and total site workforce doses have not been summed because the population distribution and workforce totals as analyzed vary among the actions. [Text deleted.]

Chemical Impacts. For Pantex, the various NEPA documents use different but otherwise acceptable methodologies to assess the health effects from hazardous chemical exposure for proposed activities. These methodologies may have different indicators for determining the health impact (for example, hazard index, cancer risk, or chemical concentration in the environment). These different indicators prevent a uniform quantitative cumulative impact analysis for this site. However, as indicated in the health impact analysis sections in the NEPA documents for the proposed actions, the health effect from any proposed action at Pantex is predicted to contribute only slightly to the impacts from the baseline activity (No Action). The potential cumulative health impact from hazardous chemicals from implementation of the proposed activities would not exhibit a noticeable increase above the baseline, would be expected to fall within acceptable regulatory limits.

Table 4.7.2.4.9-1. Estimated Average Annual Cumulative Radiological Doses and Resulting Health Effects to the Public and Workers From Normal Operation at Pantex Plant

Program	Maximally Exposed Individual Member of the Public		Offsite Population Within 80 km		Total Site Workforce	
	Total Dose (mrem)	Fatal Cancer Risk	Total Dose (person-rem)	Number of Fatal Cancers	Total Dose (person-rem)	Number of Fatal Cancers
No Action	6.1×10^{-5}	3.1×10^{-11}	2.8×10^{-4}	1.4×10^{-7}	14	5.6×10^{-3}
Storage and Disposition ^a	9.6×10^{-6}	4.8×10^{-12}	5.3×10^{-5}	2.9×10^{-8}	25	0.010
Stockpile Stewardship and Management	4.0×10^{-5}	2.0×10^{-11}	4.0×10^{-4}	2.0×10^{-7}	-7.7	-3.1×10^{-3}
Waste Management	5.9×10^{-4}	2.9×10^{-10}	6.9×10^{-3}	3.5×10^{-6}	6.9×10^{-4}	2.8×10^{-7}

^a The impacts from the collocation storage facility are presented since they encompass both Pu and HEU storage.

Source: DOE 1995cc; DOE 1995dd; DOE 1996b; Tables 4.2.4.9-1 and 4.2.4.9-2.

4.7.2.4.10 Waste Management

In addition to the storage alternatives, the other DOE programs listed in Table 4.7.1-1 would contribute to cumulative impacts at Pantex as shown in Table 4.7.2.4.10-1. The largest impact on waste management would result if the LLW Regionalized Alternative 2 and the mixed LLW Regionalized Alternative 1 were selected as the preferred alternative in the Waste Management PEIS. The Collocation Storage Alternative from this PEIS would contribute the next largest impact on waste management at Pantex.

Table 4.7.2.4.10-1. Waste Management Cumulative Impacts at Pantex Plant (2005)—Annual Volumes

Category	No Action ^a (m ³)	Stockpile Stewardship			Total (m ³)
		Storage and Disposition PEIS ^b (m ³)	and Management PEIS (m ³)	Waste Management PEIS (m ³)	
Transuranic					
Liquid	None	0.02	0 ^c	0	0.02
Solid	None	10	0 ^c	0	10
Mixed Transuranic					
Liquid	None	0	0 ^c	0	0
Solid	None	4	0 ^c	0	4
Low-Level					
Liquid	8	2.1	0 ^c	Included in solid	10
Solid	32	1,300	0 ^c	1,700 ^d	3,032
Mixed Low-Level					
Liquid	4	0.2	0 ^c	Included in solid	4
Solid	46	66	0 ^c	7 ^e	119
Hazardous					
Liquid	2	2	0 ^c	0	4
Solid	31	2	0 ^c	0 ^f	33
Nonhazardous (Sanitary)					
Liquid	141,000	129,500	7,060 ^g	NA	277,600
Solid	339	1,840	18 ^g	NA	2,197

Table 4.7.2.4.10-1. Waste Management Cumulative Impacts at Pantex Plant (2005)—Annual Volumes—Continued

Category	Stockpile Stewardship				Total (m ³)
	No Action ^a (m ³)	Storage and Disposition PEIS ^b (m ³)	and Management PEIS (m ³)	Waste Management PEIS (m ³)	
Nonhazardous (Other)					
Liquid	Included in sanitary	Included in sanitary	Included in sanitary	12,700 ^h	12,700
Solid	Included in sanitary	2,300 ⁱ	Included in sanitary	Included in sanitary	2,300

^a No Action volumes are from Table 4.2.4.10-1.

^b Collocation Storage Alternative (New Pu and HEU Storage Facility).

^c No Action Alternative.

^d Represents LLW Regionalized Alternative 2 in which Pantex would treat and dispose of its own LLW onsite. The volume was obtained by taking the estimated inventory and dividing by 20 to get annual estimate (Draft Waste Management PEIS, Vol. I of IV, Table 7.1-1, page 7-3).

^e Represents mixed LLW Decentralized Alternative or Regionalized Alternative 1. Pantex would treat and dispose of its own mixed LLW onsite. The volume was obtained by taking the estimated inventory and dividing by 20 to get annual estimate (Draft Waste Management PEIS, Vol. I of IV, Table 6.1-1, page 6-3).

^f No Action or Decentralized Alternative.

^g Downsize Assembly/Disassembly and HE fabrication alternative.

^h Represents the total annual incremental wastewater over No Action for all alternatives. Annual volume estimated by assuming 365 days per year (Draft Waste Management PEIS, Vol. II, Tables II-12.1-14 [mixed LLW], page 12-15; and II-12.2-12 [LLW], page 12-29).

ⁱ Recyclable wastes.

Source: DOE 1995cc; DOE 1995dd; DOE 1996b; PX 1995a;2, PX DOE 1995e; Table 4.2.4.10-1.